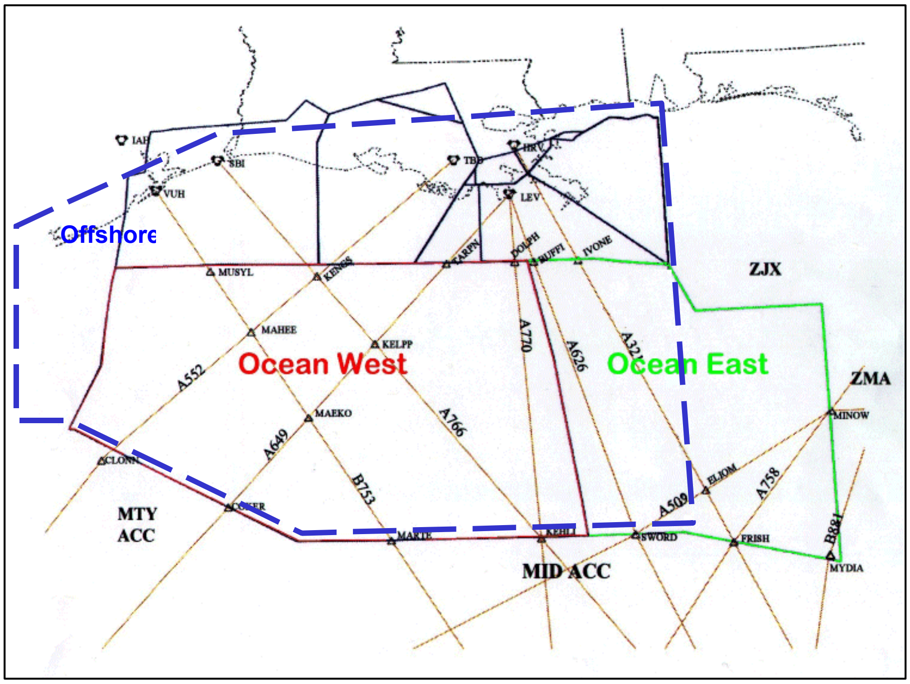
ER-5: Reduce Offshore Separation

Provide communication, navigation, and surveillance services similar to domestic en route airspace.



Background

Air carrier traffic across the Gulf of Mexico has grown at a historical rate of over 8% over the last 12 years, a rate twice that of domestic airspace. The northern portion of the Gulf is also home to one of the largest helicopter fleets in the world. This fleet of over 600 aircraft provides support for 5500 offshore oil and gas production platforms, an economic engine that contributes approximately 2.5% of the U.S. Gross Domestic Product. Due to a lack of all but the most basic communications, navigation, surveillance, automation, and weather infrastructure, the Gulf presents challenges to the FAA.

In the Gulf of Mexico, there are two major user communities: low altitude offshore operators and high altitude operators.

<u>Gulf of Mexico (GOMEX) Low Altitude Offshore Operations:</u>

GOMEX low altitude offshore airspace is populated primarily by helicopter flights supporting the oil and gas industry. The helicopter fleet consists of over 600 aircraft, which conduct an average of 6,000 flights per day (approximately 2.1 million operations per year) ferrying some 1.8 million passengers per year. These operations are contained in an area 500 miles along the Texas, Louisiana, and Mississippi coasts, extending 125-

150 miles into the Gulf. These operations primarily support oil and gas exploration and production in the Gulf of Mexico, activities that account for 2-3% of the U.S. Gross Domestic Product.

The primary operational challenges are a lack of communications and weather reporting capability. The majority of helicopter flights take place between 7,000 feet down and the surface. There are currently 5 RCAG (Remote Communications/Air-Ground) sites located on platforms in the Gulf. These sites, combined with a similar number of onshore sites, provide VHF coverage down to about 4500 feet across the helicopter operations area. The absence of direct pilot/controller communications below 4,500 feet hampers operational efficiency. When IFR conditions are prevalent, capacity is reduced nearly 95%. The oil and gas industry estimates that such a reduction in capacity costs several million dollars per day in lost productivity and overtime.

On IFR days, many operators are forced to cancel flights due to the absence of both en route and destination weather data. Rapidly-forming weather phenomena such as sea fog and temperature inversions can impact the safety of operations because pilots can encounter these conditions with little or no warning while operating on flights that are at or near the aircraft's maximum range. Adverse weather conditions impact the region an average of one day out of four.

<u>Gulf of Mexico High Altitude Operations:</u>

There are approximately 1,000 high altitude operations per day in the Gulf of Mexico. Flights operating close to shore are covered by one of the many radars ringing the Gulf of Mexico, allowing them to safely operate with smaller, more efficient radar separation standards. However, as one moves deeper into the Gulf, the similarities to domestic airspace end; approximately 300 flights per day transit Gulf oceanic airspace, with the numbers considerably higher during the busy spring and summer travel seasons. As with low altitude offshore airspace, the high altitude en route airspace of the Gulf is impacted by communications, surveillance, and automation deficiencies. Gaps in VHF coverage and lack of surveillance negatively impact capacity by forcing controllers to use larger separation standards between aircraft. Significant VHF communications gaps occur throughout the sector, but mostly at and below FL 290. Approximately 17% of the Gulf traffic operates below that level.

CNS deficiencies force aircraft operators to fly at lower, less efficient altitudes, fly longer routes, or take a delay on the ground. Seasonally, the higher altitudes in the Gulf are subject to severe chop and turbulence, forcing more aircraft down into altitudes without VHF communications, further compounding the capacity problem.

Approximately 40% of aircraft flying in Gulf non-radar airspace are denied requested altitude or route, a figure twice that of similar domestic airspace. Gulf airspace is also home to some of the largest and busiest military training airspace in the world, the presence of which contributes to airspace complexity, and limits FAA's ability to use dynamic flow control.

The absence of automated flight data exchange between the U.S. and Mexico has a direct effect on controller workload; it is estimated that some 35-45% of an oceanic controller's workload is related to manual coordination of flight data.

Gulf traffic has grown at over twice the global average over the last 12 years. In today's environment, the 300+ oceanic operations per day frequently push demand beyond capacity and generate en route or ground delays. If traffic grows as projected, these delays will increase.

Ops Change Description

FAA's goal in the Gulf of Mexico is to introduce the technology enhancements necessary to deliver a higher level of air traffic control service; a level similar to that available over the domestic United States.

Low altitude offshore airspace:

Communications: Direct pilot/controller communications will be enhanced by lowering VHF communications coverage to 1,500 feet throughout the helicopter operating area, with even lower coverage in areas near the VHF sites. FAA's operational service would be improved by allowing controllers to more precisely monitor the position and status of flights, especially during the critical approach, landing, and takeoff phases. With concurrent enhancements in automation, IFR airspace capacity could be increased to levels on par with similar domestic airspace.

Weather: Weather data collection will be enhanced by the installation of remote weather sensors similar to the Automated Surface Observation System (ASOS)/Automated Weather Observation Sites (AWOS) systems currently in use in the domestic U.S. Pilots could then be provided with important "real-time" information like cloud ceilings, visibility, altimeter settings, along with wind speed and direction. This in turn will allow pilots to more effectively plan critical aspects of their flight, such as fuel load, passenger and cargo loads, alternate landing sites, and intermediate stops. FAA's ability to report rapidly developing weather conditions will also be enhanced.

High Altitude En Route Airspace

Communications: Expanding VHF communications in the Gulf of Mexico will allow controllers to more closely monitor and manage the airspace and traffic. Lowering the floor of communications coverage to FL180 across the Houston Oceanic airspace will allow for a reduction in separation standards. Having VHF communications capability down to FL180 will allow air traffic controllers to accommodate significantly more aircraft during periods of severe weather, reducing weather related delays.

Automation: Automation tools will be used to proactively manage both air traffic and airspace complexity. For example, the automated exchange of real-time flight data with

Mexico will allow controllers to devote more of their time to separation, safety, and service tasks. Other automation enhancements, such as decision support tools, would also allow controllers to manage the airspace in the safest and most efficient manner.

Surveillance: The use of surveillance in Gulf airspace would mirror its use in the domestic environment, allowing the FAA to safely reduce separation between aircraft from the large and inefficient non-radar standards in use today. Controllers could also provide additional services such as navigational assistance, severe weather avoidance assistance, guidance around potential conflicts, and quick responses to pilot requests for altitude or heading changes. Surveillance also allows for the most dynamic form of Flow Control and Traffic Management.

Navigation: FAA is working to introduce routes and procedures that leverage available technologies and allow our users to harness the potential of satellite based navigation. Navigational enhancements would include the integration of route structures and separation standards that allow FAA's customers to take advantage of their investment in advanced avionics. The proliferation of RNAV/RNP routes, and the associated reductions in separation, will be dictated by the percentage of system users that meet minimum performance standards.

Benefits, Performance and Metrics

- Enhance safety.
- Increase the capacity and efficiency of both the high and low altitude airspace.
- Decrease weather/capacity delays.
- Increase the use of customer preferred flight trajectories.
- With surveillance, aircraft will be allowed to fly more “point-to-point” flights across the central Gulf of Mexico, allow FAA's customers to take advantage of their investment in advanced navigational technology.
- Reduce the impact of severe weather, both in the Gulf and over land in the crowded Texas/Atlanta/Miami triangle.
- Increased capacity means more aircraft from crowded on-shore domestic routes can be “offloaded” on to more direct routes across the Gulf.
- More aircraft will fly their requested altitudes and routes.
- Surveillance will increase security control of the airspace by providing more reliable and accurate aircraft identification and position.

Scope and Applicability

The FAA is progressing on a number of initiatives proposed by the Gulf of Mexico Working Group (GOMWG), a joint FAA/Industry working group, to enhance air traffic management in the area.

Low Altitude/Offshore Initiatives:

Low Altitude Communications and Weather. Low altitude operations in offshore airspace will be enhanced by increasing the number of VHF communications sites in the helicopter operating area. The number of existing RCAG sites must be increased in order to provide needed coverage down to 1,500 feet MSL. Additionally, numerous AWOS must be installed to deliver real-time weather data to controllers and pilots. Current technology allows for the installation of a combined communications/weather package. All of these new packages would be installed on existing oil platforms where power and other support services are typically available. These installations will be performed over a number of years, with several new sites being added each year. An analysis is being conducted to determine the optimum method of obtaining offshore weather data. The analysis is centered on two possibilities: Government-owned and maintained AWOS/ASOS sites vs. some type of private industry weather information service. Both options will be presented to the JRC in FY02 for a final decision. The weather data source selection decision will be made in 2002.

High Altitude En Route Initiatives:

Near-Term (2001-2003)

- High Altitude Communication. The FAA has sponsored the placement of remote VHF transmitter/receivers on a series of buoys in the Gulf. Two prototype buoys have undergone operational testing both dockside and in the central Gulf during the 1999-2001 timeframe. Currently, the FAA is in the production phase, and buoys are being constructed and tested in preparation for deployments planned in FY2002. The combination of the buoys and current onshore systems should allow direct pilot/controller communications down to FL180 across most of the FAA's Gulf airspace. Plans call for production buoys to be deployed, weather permitting, as follows:
    - Production Buoy #1……..July 2002
    - Production Buoy #2……...July 2002
    - Production Buoy #3……...August 2002
    - Production Buoy #4 (dockside)……...October 2002

Mid-Term (2003-2007)

- En route automation. Automated flight data transfer between the United States and Mexico will provide controllers with more time for critical safety and separation duties. Mexico and the United States are currently in the initial phases of this work, with enhanced automation capabilities being added over the next few years. Initial automated flight data capabilities with Mexico will begin in 2004.

- RNAV Route Expansion. The FAA has established a program to analyze key safety parameters to determine how the application of RNAV track spacing can be expanded to areas of the Gulf that are not under radar surveillance. Additional RNAV routes implemented in Gulf in 2003.

Long-Term (2007-2010)

- Enhanced Surveillance. The introduction of surveillance into non-radar airspace will enable significant reductions in aircraft separation. An analysis of the applicability of radar for Gulf surveillance is currently underway. The use of the Gulf as a future-systems surveillance test bed is also being explored. Engineering and feasibility studies to identify surveillance options will begin in 2002. Studies related to determination of surveillance infrastructure are considered R&D activities.

These initiatives to enhance CNS capabilities will reduce separation standards, while providing parallel benefits to air traffic flow management and increasing airspace capacity and operating performance.

Key Decisions

- Determination of the level of service FAA will provide in the Gulf of Mexico.
- Decision regarding program management must be made to ensure program continuity and adequate resource allocation.
- Consensus must be reached that the benefits of Gulf CNS improvements outweigh related operator costs for equipage.
- Immediate funding solution for Gulf programs must be identified.
- Data source for offshore weather information must be identified.
- Based on the results of surveillance analysis and research activities, a decision will be made on how to proceed with surveillance in the Gulf.

Key Risks

- Without formation of SPO/IPT, Gulf initiatives will remain scattered and unfocused.

- Program has no funding baseline, no resources dedicated beyond FY02 buoy funding.
- Effect of severe weather on deployment and maintenance of communications buoys.